

**What is claimed is:**

1. A control packet processing apparatus for receiving a control packet used to exchange a variety  
5 of information among devices that support a spanning tree protocol, comprising:
  - a receiving device receiving the control packet;
  - a buffer device storing the received control packet; and
  - 10 a control device autonomously transferring the control packet stored in the buffer device to a processing unit re-configuring a communication route of a spanning tree protocol in a specific cycle when no control packet is received for a specific period.
- 15 2. A control packet processing apparatus for receiving a control packet used to exchange a variety of information among devices that support a spanning tree protocol, comprising:
  - 20 a generation device generating a control packet instructing a receiving side device to stop transmitting the control packet to prevent the re-configuration of the communication route of a spanning tree protocol when the receiving side device receives no control packet
  - 25 for a specific period; and

a transmitting device transmitting the generated control packet.

3. A control packet processing apparatus for  
5 receiving a control packet used to exchange a variety of information among devices that support a spanning tree protocol, comprising:

an input device inputting an instruction to start an automatic transmission of a control packet; and

10 a transmitting device autonomously transmitting a control packet for a specific period at specific intervals from when a processing unit outputting a control packet transmit request stops until the processing unit restarts according to the instruction.

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4. The control packet processing apparatus according to claim 3, wherein

said input device inputs stop instruction to stop the automatic transmission of the control packet, and

20 said transmitting device stops autonomously transmitting the control packet according to the stop instruction.

5. The control packet processing apparatus according  
25 to claim 3, further comprising

a table processing device,  
wherein

said transmitting device has a table storing a  
correspondence relationship between an address and a  
5 port of a frame transferred according to the spanning  
tree protocol, and

the table processing device discards a table flush  
instruction accompanying the re-configuration of the  
communication route of a spanning tree protocol while  
10 said transmitting device is autonomously transmitting  
the control packet.

6. The control packet processing apparatus according  
to claim 3, 4 or 5, which prevents another device from  
15 detecting a change in the communication route of a  
spanning tree protocol, and recovers the communication  
route just before the stoppage of an operation of the  
processing unit when the processing unit stops or  
restarts.

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7. The control packet processing apparatus  
according to claim 3, 4 or 5, further comprising

a receiving device normally receiving a control  
packet transmitted by another device while autonomously  
25 transmitting the control packet.

8. The control packet processing apparatus according to claim 7, wherein

said transmitting device monitors a receiving  
5 situation of a control packet transmitted from the another device, and stops the transfer of a data frame according to the spanning tree protocol when a change is detected.

10 9. The control packet processing apparatus according to claim 7, wherein

said transmitting device monitors a receiving  
situation of a control packet transmitted from the another device, and initializes the spanning tree  
15 protocol when a change is detected.

10. The control packet processing apparatus according to claim 7, wherein

said transmitting device monitors a receiving  
20 situation of a control packet transmitted from the another device, and modifies contents of a control packet autonomously transmitted according to a changed contents when contents of the received control packet change.

11. A storage medium on which is recorded a program for enabling the control packet processing apparatus to receive a control packet used to exchange a variety of information among devices that support a spanning  
5 tree protocol, said program comprising:

storing the received control packet in a buffer device; and

autonomously transferring the control packet stored in the buffer device to a processing unit  
10 re-configuring a communication route of a spanning tree protocol in a specific cycle when no control packet is received for a specific period.

12. The storage medium according to claim 11, wherein  
15 said transfer process includes generation of a pseudo-receiving trigger indicating the reception of a control packet in the specific cycle from when an instruction to stop generating the pseudo-receiving trigger is received until an instruction to stop the  
20 generation of the trigger is received, and transfer of the control packet stored in said buffer device to the processing unit every time the pseudo-receiving trigger is generated.

25 13. The storage medium according to claim 11, wherein

said program enables said control packet processing apparatus to start said transfer process when said control packet processing apparatus receives a control packet instructing said control packet processing apparatus to stop transmitting the control packet.

14. The storage medium according to claim 13, wherein said transfer process includes generation of a pseudo-receiving trigger indicating the reception of a control packet in the specific cycle, and transfer of the control packet stored in said buffer device to the processing unit every time the pseudo-receiving trigger is generated.

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15. The storage medium according to claim 13, wherein said control packet processing apparatus receives a bridge protocol data unit as a control packet to be stored in said buffer device and receives a bridge protocol data unit containing a flag instructing a transmission stoppage as the control packet instructing the transmission stoppage.

16. The storage medium according to claim 13, wherein said control packet processing apparatus receives

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a bridge protocol data unit as a control packet to be stored in said buffer device and receives another control packet other than the bridge protocol data unit as the control packet instructing the transmission  
5 stoppage.

17. The storage medium according to claim 13, wherein when said control packet processing apparatus receives a control packet instructing said control  
10 packet processing apparatus to restart transmitting the control packet, said program enables said control packet processing apparatus to stop said transfer process.

18. The storage medium according to claim 17, wherein  
15 said control packet processing apparatus receives a bridge protocol data unit as the control packet to be stored in said buffer device, receives a bridge protocol data unit containing a flag instructing transmission stoppage as a control packet instructing  
20 transmission stoppage and receives a bridge protocol data unit containing a flag instructing transmission restart as a control packet instructing transmission restart.

25 19. The storage medium according to claim 17, wherein

said control packet processing apparatus receives a bridge protocol data unit as the control packet to be stored in said buffer device, and receives another control packet other than the bridge protocol data unit  
5 as both a control packet instructing transmission stoppage and a control packet instructing transmission restart.

20. The storage medium according to claim 13, wherein  
10 when said control packet processing apparatus receives a subsequent control packet, said program enables said control packet processing apparatus to stop said transfer process.

15 21. A storage medium on which is recorded a program for enabling the control packet processing apparatus to receive a control packet used to exchange a variety of information among devices that support a spanning tree protocol, said program comprising:

20 generating a control packet instructing a transmission stoppage for the control packet to prevent a re-configuration of the communication route of a spanning tree protocol when no control packet is received for a specific period in the receiving side  
25 device; and



transmitting the generated control packet.

22. The storage medium according to claim 21, wherein  
said control packet processing apparatus  
5 transmits a bridge protocol data unit as a control packet  
to be transferred among devices, and generates a bridge  
protocol data unit containing a flag instructing a  
transmission stoppage as a control packet instructing  
transmission stoppage.

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23. The storage medium according to claim 21, wherein  
said control packet processing apparatus  
transmits a bridge protocol data unit as a control packet  
to be transferred among devices, and generates another  
15 control packet other than the bridge protocol data unit  
as a control packet instructing transmission stoppage.

24. The storage medium according to claim 21, wherein  
when restarting control packet transmission, said  
20 program enables said control packet processing  
apparatus to further perform generation of a control  
packet instructing transmission restart and  
transmission of the control packet instructing  
transmission restart.

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25. The storage medium according to claim 24, wherein  
said control packet processing apparatus  
transmits a bridge protocol data unit as a control packet  
to be transferred among devices, generates a bridge  
5 protocol data unit containing a flag instructing  
transmission stoppage as the control packet instructing  
transmission stoppage and generates a bridge protocol  
data unit containing a flag instructing transmission  
restart as the control packet instructing transmission  
10 restart.

26. The storage medium according to claim 24, wherein  
said control packet processing apparatus  
transmits a bridge protocol data unit as a control packet  
15 to be transferred among devices, and generates another  
control packet other than the bridge protocol data unit  
as both the control packet instructing transmission  
stoppage and the control packet instructing  
transmission restart.

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27. The storage medium according to claim 21, wherein  
said program enables said control packet  
processing apparatus to further restart the control  
packet transmission by transmitting a subsequent  
25 control packet.

28. A storage medium on which is recorded a program for enabling the control packet processing apparatus to receive a control packet used to exchange a variety  
5 of information among devices that support a spanning tree protocol, said program comprising:

inputting an instruction to start an automatic transmission of a control packet; and

10 instructing a transmitting device to autonomously transmit a control packet for a specific period at specific intervals from when a processing unit outputting a control packet transmit request stops until the processing unit restarts according to the instruction.

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29. A storage medium on which is recorded a program for enabling the control packet processing apparatus to receive a control packet used to exchange a variety of information among devices that support a spanning  
20 tree protocol, said program comprising

autonomously transmitting a control packet for a specific period at specific intervals from when a processing unit outputting a control packet transmit request stops until the processing unit restarts  
25 according to an instruction to start automatic

transmission of the control packet.

30. A carrier signal for carrying a program for enabling a control packet processing apparatus to receive a control packet used to exchange a variety of information among devices that support a spanning tree protocol, said program comprising:

storing the received control packet; and  
autonomously transferring the control packet  
10 stored in the buffer device to a processing unit re-configuring a communication route of a spanning tree protocol in a specific cycle when no control packet is received for a specific period.

15 31. A carrier signal for carrying a program for enabling a control packet processing apparatus to receive a control packet used to exchange a variety of information among devices that support a spanning tree protocol, said program comprising:

20 generating a control packet instructing a transmission stoppage of the control packet to prevent the re-configuration of the communication route of a spanning tree protocol when a receiving side device receives no control packet for a specific period; and  
25 transmitting the generated control packet.

32. A carrier signal for carrying a program for enabling a control packet processing apparatus to receive a control packet used to exchange a variety of  
5 information among devices that support a spanning tree protocol, said program comprising:

inputting an instruction to start an automatic transmission of a control packet; and

10 instructing a transmitting device to autonomously transmit a control packet for a specific period at specific intervals from when a processing unit outputting a control packet transmit request stops until the processing unit restarts according to the instruction to start the automatic transmission of the  
15 control packet.

33. A carrier signal for carrying a program for enabling a control packet processing apparatus to receive a control packet used to exchange a variety of  
20 information among devices that support a spanning tree protocol, said program comprising

autonomously transmitting a control packet for a specific period at specific intervals from when a processing unit outputting a control packet transmit  
25 request stops until the processing unit restarts

according to an instruction to start automatic transmission of the control packet.

34. A control packet processing method for receiving  
5 a control packet used to exchange a variety of information among devices that support a spanning tree protocol, comprising:

receiving the control packet;

storing the received control packet in a buffer  
10 device; and

autonomously transferring the control packet stored in the buffer device to a processing unit re-configuration a communication route of a spanning tree protocol in a specific cycle when no control packet  
15 is received for a specific period.

35. A control packet processing method for receiving a control packet used to exchange a variety of information among devices that support a spanning tree  
20 protocol, comprising:

inputting an instruction to start an automatic transmission of a control packet; and

autonomously transmitting a control packet for a specific period at specific intervals from when a  
25 processing unit outputting a control packet transmit

request stops until the processing unit restarts according to the instruction to start the automatic transmission of the control packet.

5 36. A control packet processing apparatus for receiving a control packet used to exchange a variety of information among devices that support a spanning tree protocol, comprising:

receiving means for receiving the control packet;  
10 buffer means for storing the received control packet; and

control means for autonomously transferring the control packet stored in the buffer device to a processing unit re-configuring a communication route  
15 of a spanning tree protocol in a specific cycle when no control packet is received for a specific period.

37. A control packet processing apparatus for receiving a control packet used to exchange a variety  
20 of information among devices that support a spanning tree protocol, comprising:

generation means for generating a control packet instructing a transmission stoppage of the control packet to prevent the re-configuration of a  
25 communication route of a spanning tree protocol when

a receiving side device receives no control packet for a specific period; and

transmitting means for transmitting the generated control packet.

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38. A control packet processing apparatus for receiving a control packet used to exchange a variety of information among devices that support a spanning tree protocol, comprising:

10 input means for inputting an instruction to start an automatic transmission of a control packet; and

transmitting means for autonomously transmitting a control packet for a specific period at specific intervals from when a processing unit outputting a control packet transmit request stops until the  
15 processing unit restarts according to the instruction to start automatic transmission of the control packet.